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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Meetings of February. An inter-monthly meeting of the American Geographical Society was held on Tuesday evening, February 6, at the Engineering Societies' Building, 29 West Thirty-ninth Street. President Greenough presided. The lecture for the evening was entitled "Petrograd and Moscow: The Rise of the Slav," by B. R. Baumgardt. The regular monthly meeting was held on February 20. President Greenough presided. He submitted for confirmation the names of 101 candidates for Fellowship, each of whom had been approved by the Council, and they were confirmed as Fellows of the Society. Thereupon Dr. Arthur L. Day, director of the Geophysical Laboratory of the Carnegie Institution, delivered a lecture entitled "The Crater of Kilauea." Dr. Day's investigations in the Hawaiian Islands and especially on the border of the crater of Kilauea, with its boiling lake of lava, have been of the most striking character and throw light upon many of the former mysteries of volcanic activity. Probably for the first time in the history of science, samples of gas were obtained from red-hot lava before it reached the air. Dr. Day's lecture dealt with the results of these investigations.

NORTH AMERICA

Aërial Mail Line between New York and Chicago. In the past few months there has been a growing interest in plans for a mail service between New York and Chicago by aëroplane. It is estimated that the trip can be made in from six to fourteen hours, depending upon the wind, and that the average running time for the 720 miles (air line) between New York and Chicago would be eight hours, or between sunrise and sunset. Problems still to be solved are emergency stations, equipped with lights, landing stages, extra machines with pilots, etc. According to an article in *Flying* for January, 1917 (E. H. Smith: New York-Chicago Aërial Mail Lines, pp. 504-506), the Postmaster General has asked an appropriation of $100,000 from Congress for experimental purposes.

Highway Tunnels under the Hudson River. One more step in the costly conquest of New York's water barriers (see the article by Ellsworth Huntington on "The Water Barriers of New York City" in the September, 1916, *Review*) is anticipated by a proposal made to the New York State Bridge and Tunnel Commission by the engineering firm which built the Pennsylvania Railroad and Hudson-Manhattan tunnels (*Scientific American,* Jan. 13, 1917, p. 58). The suggested step aims at eliminating the delay to wheeled traffic unavoidable in the ferriage system across the Hudson. The operations of the system fall into two distinct traffic zones, divisible by an east-to-west line at 23d Street. From a study made for the Pennsylvania Railroad in 1913 it was ascertained that, out of a total of 19,660 vehicles crossing the river daily, only 2,000 used the ferries above 23d Street. To relieve the downtown congestion and delay, it is proposed to construct highway tunnels under the river immediately south of the Hudson-Manhattan tunnels. The two tunnels, one for westbound, the other for eastbound traffic, will be 8,350 feet long and will be able to accommodate 5,000,000 vehicles per annum. Tunnels of this description are in successful operation in some European cities. London has two with respective lengths of 6,200 and 6,883 feet. In 1913 each accommodated about 1,000,000 vehicles.

Recent Development in Southernmost Saskatchewan. The recent construction of a branch of the Canadian Pacific Railway through southernmost Saskatchewan and Alberta, paralleling almost the whole length of the northern Montana boundary at a distance of 30 to 40 miles, has been followed by a characteristic ingress of settlers. The eastern portion of this area, the Wood Mountain-Willowbunch Lake district, has recently been investigated (Bruce Rose: Wood Mountain-Willowbunch Coal Area, Saskatchewan, *Geol. Survey of Canada Memoir 89,* 1916). It lies immediately west of the Coteau du Missouri. Through it from east to west runs an apparently base-leveled plateau of Tertiary rocks. The plateau constitutes a portion of the continental divide. On the southern side the topography is roughened by numerous coulees draining to the Missouri. The surface is unsuited for grain growing and for railroad construction, and the area is likely to remain the grazing country for which it is particularly well adapted. North of the watershed, however, shallow valleys drain to a small interior basin, within the drainage area of the Saskatchewan. Here the topography is favorable for farming, and the yield of wheat is above the average for the Prairie Plains. A further stimulus to future progress lies in the mineral deposits recently investigated by the Canadian Geological Survey. The lower Tertiary strata include considerable beds of good-quality lignite and excellent brick clays. The close association of the two materials and their occurrence in a land without timber or water-power resources should render them peculiarly valuable to the fast-growing population of the West.

Acquisition of the Danish West Indies by the United States. Ownership of the Danish West Indies passed from Denmark to the United States on January 17, when the ratifications of the treaty conveying the islands to this government were formally exchanged. The title passed with the exchange of ratifications, but actual physical possession will not take place until the purchase price of $25,000,000 is paid to Denmark.

The Danish West Indies lie immediately east of Porto Rico and consist of the islands of St. Thomas, St. John, and St. Croix (Santa Cruz) and adjacent islets. St. Thomas and St. John form part of the Virgin Islands, which represent the summits of the submerged eastern end of the Antillean mountain chain, of which Cuba, Haiti, and Porto Rico are the most conspicuous members. St. Croix lies somewhat off this structural line about 80 miles south of the other two islands, separated from them by a deep channel. The area of St. Thomas is about 33 square miles; of St. John, 21; and St. Croix, 74; the total area of the group, including the smaller islands, being given by the *Statesman's Year-Book for 1916* as 138 square miles and the population in 1911 as 27,086. The geographic significance of the islands has already been dwelt upon in the *Review* (April, 1916, Vol. 1, p. 299).

With the transfer of the islands, the question of name demands a solution. Possibly the best suggestion so far made is the one reported in press despatches from the islands under date of March 3 to call them the "American Virgin Islands." This would recognize an already existing name (dating from Columbus) and would form an equivalent to the current designation of the remaining islands, which are known as the British Virgin Islands. Besides, it would follow the precedent of the similar case of the Samoan Islands, the American members of which, since the division of the group between the United States and Germany, have been known as American Samoa.

SOUTH AMERICA

Indian Reservations in Argentina. Argentina, where European settlement more nearly resembled that of the North than in any other Spanish colony, is today the only Latin-American country confronted by an Indian problem comparable with that of the United States. The uncivilized Indians with whom the Argentine government is concerned occupy the territorial extremes of the country. They include various tribes of the Gran Chaco—best known among them the Tobas—and the Tehuelches and Onas of Santa Cruz and Tierra del Fuego.

The southern tribes present the less serious problem. Their numbers are small and diminishing. According to the Ministry of the Interior (*Memoria del Ministerio del Interior, 1912-1913*, pp. 99-120, Buenos Aires, 1913), the Tehuelches are estimated at 700 and the Onas at less than 300 (compare the table on p. 175 in the article by C. W. Furlong at the beginning of this number of the *Review*). The government has founded an *estancia* for their benefit, and others are under the protection of various missions.

These two means of caring for the native, the civil *reducción* and the religious *misión*, are also found in the north. The ancient civilizing force of the mission still flourishes with the support of government aid. In 1914, for instance, the Franciscans of Salta were granted 20,000 acres on the Rio Bermejo, with authority for exploitation of the forests and various subsidies (*Commerce Repts.*, 1914, No. 247). The first civil reservation was founded by decree of 1911 under military authority at Napalpí in the Chaco. In 1912 it was taken over by the Department of the Interior. The first fruits of the venture appear promising. The Indians have small cultivations of vegetables, corn, and cotton and work in the *quebracho* forests. The forest products are sold on the Buenos Aires market, proceeds going to the reservation funds. The government has lately decreed the formation of two more colonies for the Tobas and Pilagas (*South American Journ.*, Vol. 81, 1916, No. 12). The one, of 53,000 hectares (131,000 acres), is to be located on the banks of the Bermejo, and the other, of 85,000 hectares (210,000 acres), between the Bermejo and the Pilcomayo.

EUROPE

Extension of the Swedish Waterway System. The completion of a canal for seagoing vessels connecting Lake Venern, in southwestern Sweden, with the port of Gotenburg on the Kattegat, is reported in *Engineering News* for February 22, 1917 (pp. 297-298). The new canal, an enlargement of an older waterway, has a length of 52 miles and contains six locks for a difference of level of 145 feet. It is known as the Trollhättan Canal, and its construction for a length of 47 miles consisted merely in the canalization of the Göta River. Vessels of a draft of 13.2 feet can be accommodated at present, and it is intended to deepen the canal for vessels of a draft of 16.4 feet.

The same source reports that a bill has recently been passed by the Swedish Parliament providing for the reconstruction of a canal—presumably the Södertelge Canal is meant—connecting Lake Mälar, at whose eastern end lies Stockholm, with the Baltic, so as to make it available for seagoing vessels. When this waterway has also been completed, the large part of southern Sweden which can be reached by way of Lakes Venern and Mälar will be made directly accessible to ocean traffic. Both the Trollhättan Canal and the Södertelge Canal form part of a larger waterway, known as the Göta Canal, which leads entirely across southern Sweden from the North Sea to the Baltic by way of Lakes Venern and Vettern, canalized portions of the intervening rivers and smaller lakes, and a final stretch along the Baltic coast from Söderköping at the head of a fiord in 58½° N. to the Södertelge Canal and thence to Stockholm (see map, 1:1,000,000, in Meyer's guide-book to Scandinavia, 10th edit., Leipzig, 1911, between pp. 106 and 107). The elimination of this coastal portion and the transformation of the whole waterway into an inland route is foreshadowed by another project, mentioned in the same article, to connect Lakes Mälar and Venern, presumably by the intervening Lake Hjälmar.

Grenoble: A Study in City Geography. In connection with Professor Raoul Blanchard's recent entrance upon his activities as visiting professor from France at Harvard University for the current semester, referred to in the February *Review* (p. 154), the following analysis of his suggestive ''Grenoble: Étude de géographie urbaine'' (Paris, 1911) may be of interest, especially in view of the enormous expansion which the war has brought about in that city's industrial life, based, as it is, on water power and therefore independent of the war-created stringency in coal. In this study Professor Blanchard explains the origin and development of an urban center by the functioning of its physical surroundings.

Grenoble is a confluence town: it lies at the meeting of rivers and valleys, a focus for regions of great natural diversity. Yet in this it is not unique. Many sites in these West Alpine valleys have initially possessed similar advantages. Nor have the rivers upon which Grenoble stands contributed great positive advantages. Navigation has played no vital part in its history, and the low-lying alluvial clays upon which the old town was built have afforded but a precarious and unhealthful site. In some respects the riverine location has proved a disadvantage. It is indeed to the disadvantageous, because barrier, character of the river that Grenoble owes its origin. Here, where the Mont Genèvre route from the Alps to Lyons gains the Isère, is the only point in a long stretch of its course where the river could be crossed. From Albertville, where the river enters a structural depression between the Alps and the Pre-Alps, it pursues a meandering course, unstable and unbridgeable save at the confluence with the Drac. This youthful torrent, with a regimen highly sensitive to variations in water supply, resulting from heavy autumn rains, melted snows of spring, and *föhn*-melted snows of winter, is a powerful transporting agent. By the great fan built at its mouth it could throw the meandering Isère over to the right wall of the valley and reduce its devious course to a single channel. Here, then, was the crossing place and an inevitable town site. As a bridge town Grenoble existed with little modification at least from Roman days to the close of the sixteenth century. Its fortunes fluctuated with those of the regions to which its highway led. In the prosperous days of the thirteenth and fourteenth centuries Grenoble flourished. Its great fair, held for 21 days in September, drew merchants ''from all parts of the world.'' The bridge was always the center of animation. We have a lively picture of the new one built after the great flood of 1219. This bridge was the object of ''tender solicitude''; one made donations to it; it had properties and rents and was itself the main street.

It was not until the seventeenth century that Grenoble entered into industrial life. Then the town began to reap the benefits of its diversified regional surroundings. It gathered the growing industries based on the mountain and fertile valley products—fabrication of hemp, dressing of leather, manufactures of playing cards and, above all, of gloves. Under the unfavorable conditions of the eighteenth century industry stagnated; in the nineteenth century it underwent a series of transformations that have made the Grenoble of today a focus of industry, a circumstance at first surprising in view of its remoteness from the large consuming and producing centers. In part this is due to the nature of its early industries, best exemplified by the manufacture of gloves, articles of small bulk and weight and relatively high value. In part it is due to the discovery of new products and of new means for developing motive force. Local limestone and an excellent natural cement and the anthracite of the La Mure basin helped progress in the earlier part of the century. Later came the great advance dependent on exploitation of the ''white coal'' with which the Alpine valleys are so well dowered. Not only have hydro-electric resources supplied power for innumerable new centers of production, but in Grenoble they have provided a means towards and a reason for the metallurgical industry that is now prominent in the diversified occupations of the town.

But Grenoble is more than an industrial center: its varied functions have made the old capital of the Dauphiné a modern regional capital of distinction. Grenoble is administrative center of its department, and its judicial powers extend over the three departments of the Dauphiné province. The command of Alpine lines of communication has always given Grenoble importance from the strategic point of view: the town is a true military capital. As an intellectual center Grenoble is chiefly remarkable for the rapid advance made during the last twenty years. The policy of attracting foreign students to the university has been successful to a high degree. Allied with it is a similar policy relating to the tourist, wherein Grenoble owes no little to its ancient vantage as a passageway to the mountains. Commercially Grenoble figures most prominently as an importing center for a region which makes considerable demands on the outside world for foodstuffs as well as for raw materials of industry. Unfortunately, commercial transit is not well developed in the Dauphiné. In this respect Grenoble's sphere of influence is especially limited in the south and east. North and west, while transportation facilities are better, the potency of regional control is limited by the competition of the great center of Lyons.

ASIA

Irrigation in Mesopotamia. Writing in the *Near East* for September 29 and October 6, 1916, Sir William Willcocks deals once more with the problem of the restoration of Mesopotamia's ancient fertility. He recalls the dependence of Babylonian prosperity on the control of the up-stream waters and the custom of all-the-year-round, field-by-field irrigation, a method in contrast with the large-scale, basin type of irrigation practiced in Egypt. The contrast is related to the difference in regimen between the Mesopotamian rivers and the Nile: the irrigation problems of the former have always been beset by drawbacks unknown in the valley of the ''gentlemanly'' Nile. The rise of both the Tigris and Euphrates is abrupt and unheralded. The annual floods, occurring between the months of March and May, are too late for the winter and too early for the summer crops, and the amount of silt carried at maximum flood is five times as great as that of the Nile. Yet the amount of water that can be made available is far greater, and the alluvial soil contains as much potash and more nitrogen, phosphate, and lime than that of Egypt. Of the two Mesopotamian rivers the control of the Euphrates, successfully managed by the ancients, is relatively easier than the Tigris.

The new plans, while much more extensive than any of the projects dreamt of by the ancient rulers, nevertheless differ but little in method, whether in respect of flood control, irrigation, or reclamation. Legends tell us that Marduk, one of the great Babylonian deities, reclaimed the flooded areas by dividing them into basins surrounded by dikes. Today it is proposed to divide the swamps and marshes into compartments of 12,000 acres and irrigate each one separately. In the upper delta floods will be controlled by escapes to the desert on old lines and by barrages whence will be created vast reservoirs. On resumption of the work commenced before the outbreak of the war some changes will be followed in the details of the original plan (see ''The Irrigation of Mesopotamia'' by Sir W. Willcocks, London, 1911, reviewed in the *Bull. Amer. Geogr. Soc.*, Vol. 44, 1912, p. 701, and articles by the same author in the *Geogr. Journ.*:— ''Mesopotamia, Past, Present, and Future,'' Vol. 36, 1910, and ''The Garden of Eden and Its Restoration,'' Vol. 40, 1912). Discovery of a limestone outcrop, the only solid foundation seen by Willcocks in the whole of Babylonia, will afford a superior site for the upper barrage on the Euphrates. The upper barrage on the Tigris will be modified on the line of the great Bow River dam at Bassano, Alberta, which appears to be well-suited to a shingle foundation.

But behind such questions of detail is an entirely new outlook on the Mesopotamian question. Hitherto projects for the revival of the country were based on the assumption that Turkish rule was to continue: plainly this is considered no longer. Under a more liberal government, construction, organization, and control can be planned with greater latitude. In any event, however, one point of fundamental importance will remain unchanged. This is the necessity for complete control by a single power of the whole of the region from Hit and Samarra to the Persian Gulf and a definite understanding with Upper Mesopotamia as to the division of the low water supply.

POLAR REGIONS

Rescue of the Marooned Men of Shackleton's Ross Sea Party. The rescue by Shackleton of the men of his Ross Sea party is reported in a wireless despatch received in Wellington, New Zealand, on February 6 from the *Aurora,* the relief ship on which he had sailed from that port on December 22 (*New York Times,* February 6, based on *London Daily Chronicle*). With this final rescue all of the men of Shackleton's transcontinental Antarctic expedition are accounted for. It will be recalled (July, 1916, *Review,* pp. 54-57) that Shackleton himself and five of his men reached the Falkland Islands on May 31, 1916, after their ship, the *Endurance,* had been crushed in the Weddell Sea, and that, at the fourth attempt, he finally rescued, on August 30, the remaining twenty-two men who were marooned on Elephant Island of the South Shetland group (September *Review,* pp. 231-232). The breaking away on May 6, 1915, of the *Aurora,* the vessel of the Ross Sea party of the expedition on the opposite side of the Antarctic Continent, had left ten men stranded there (May, 1916, *Review,* p. 378). It was to rescue these men that Shackleton had set forth in December from New Zealand. Unfortunately, in their isolation of twenty months, three of the party had died, A. P. Spencer Smith, Victor G. Hayward, and Captain Mackintosh, the leader.

Details of their hardships are given in a message from Shackleton to the *London Daily Chronicle* (summarized in the *New York Times* of February 12). The task of the Ross Sea party, it will be remembered, was to lay depots on the Ross barrier ice for the use of Shackleton's party when it came down from the Antarctic plateau on its way overland from the Weddell Sea. In spite of their abandonment they set resolutely to work. In October, 1915, six of them, headed by Captain Mackintosh, left Cape Evans, on the inner side of Ross Island (77¾° S.). The last depot was laid at Mt. Hope (83½° S.), at the foot of Beardmore Glacier, one of Scott's depots. Here two of his sledges were found—the only traces of Scott's expedition they came across. On the return journey in January scurvy attacked the party. The Rev. Spencer Smith became so helpless that he had to be lashed to a sledge in a sleeping bag. When they were only eleven miles from Bluff depot (79° S.), the party was overtaken by a furious blizzard, which raged from February 17 to March 1. The temperature was —30° F. Fuel and provisions were by this time practically exhausted. After camping for six days, the party on February 23 started through the blinding storm to attempt to reach the depot. Soon after starting, Mackintosh fell in his tracks, having reached the limit of human endurance. He was left with Smith, and with Wild to look after them both, while Joyce, Richards, and Hayward with four starving dogs struggled on to reach the depots. In a momentary clearance of the storm on February 26 the depot was sighted. The party immediately returned to their comrades with food and oil. On the way Hayward broke down. Mackintosh and Smith were helpless; they were lashed to a sledge, and, with Hayward staggering along beside them, the party started homeward. At first the party was helped by a sledge sail, but on March 7 the wind dropped, and the sail became useless. Three men pulling now were unable to move the sledges, burdened with their sick comrades. Mackintosh, seeing the gravity of the situation, unselfishly decided to remain behind, so as to give the other sick men a chance to reach safety. They left him in a tent with three weeks' provisions on March 8, forty miles from safety. The party pushed on with Hayward and Spencer Smith, all now weakening from the scurvy. Spencer Smith died on March 9, after forty-seven days' illness. He was cheerful to the end. On March 11 Hut Point, on the southwestern corner of Ross Island, was reached, and fresh meat and dried vegetables were procured. Three days afterward Joyce, Richards, and Wild started back to get Mackintosh. This they successfully accomplished, and by March 18 all were safe at Hut Point.

After having survived the hardships of the 800-mile journey to the foot of Beardmore Glacier and back, Mackintosh and Hayward succumbed on the short 15-mile journey across the sea ice from Hut Point to Cape Evans. They left the former camp on May 8, 1916, in fine weather but were overtaken by a sudden blizzard. When their anxious companions started after them, their tracks were found to terminate abruptly in open water. There is no doubt that the two men were lost when young ice broke loose under the influence of the blizzard.

Such were the fortunes of Shackleton's expedition. That he was able to bring back all but three of his men is further striking evidence of his extraordinary energy and indomitable spirit. England has every reason to be proud of her Polar record; once more, in the words of Captain Scott's immortal "Message to the Public," it has been shown "that Englishmen can endure hardships, help one another, and meet death with as great fortitude as ever in the past."

PHYSICAL GEOGRAPHY

Twilight. Much popular interest attaches to the intensity and duration of twilight, and there is a good deal of misconception and confusion in regard to the matter. Professor H. H. Kimball has recently reviewed the literature on the subject, and has prepared a working bibliography, which will be useful to those who desire further information (*Monthly Weather Rev.*, November, 1916). The author has also included the results of recent photometric measurements of the intensity of twilight. *Astronomical* twilight has, from an early date, been considered to end in the evening and to begin in the morning when the true position of the sun's center is 18° below the horizon, at which time stars of the sixth magnitude are visible near the zenith and generally there is no trace on the horizon of twilight glow. On the other hand, *civil* twilight ends in the evening and begins in the morning when the true position of the sun's center is 6° below the horizon, at which time stars and planets of the first magnitude are just visible.

The same number of the *Monthly Weather Review* contains translations of von Bezold's classic description of twilight (from Pernter and Exner's "Meteorologische Optik"), of Mairan's description of anti-twilight (1754), and of Heim's explanations of the western purple light and the eastern afterglow. R. DeC. Ward.

Variations in Solar Radiation and Climatic Changes. The annual report (June 30, 1916) on the work of the Astrophysical Observatory of the Smithsonian Institution mentions several matters of interest to those who are concerned with problems of climatic "changes" and their causes. Observations made with a silver-disk pyrheliometer at the Harvard College Observatory in Arequipa, Peru, since August, 1912, have been reduced and published (*Smithsonian Misc. Colls.*, Vol 65, No. 9, 1916). The solar-constant values from the Arequipa observations confirm the variations of the sun observed at Mount Wilson by the complete spectrobolometric process. There is no evidence from the Arequipa records to suggest that the Katmai eruption of June 6, 1912, produced any turbidity of the atmosphere south of the equator. The Mount Wilson observations of 1913-1914 have been reduced and a preliminary publication has been made (*Smithsonian Misc. Colls.*, Vol. 66, No. 5, 1916). The results show distinctly that the average distribution of solar radiation over the solar disk varies from year to year. Changes also occur from day to day.

A new instrument, the *pyranometer*, has been devised by Messrs. Abbot and Aldrich, capable of measuring accurately the intensity of sky light by day and of radiation outward toward the whole sky by night (*Smithsonian Misc. Colls.*, Vol. 66, No. 7, 1916). An allotment has been made from the Hodgkins Fund for the purpose of duplicating the solar-constant work of Mount Wilson "at the most favorable station on the earth." An expedition to carry on this work will go out in the summer of 1917, probably to South America. The plan is to have observations made at the new station and at Mount Wilson for several years, for the purpose of making full and accurate determinations of solar variations for comparison with climatic changes on the earth's surface.

R. DeC. Ward.

GEOGRAPHICAL NEWS

Personal

Dr. Frank D. Adams of McGill University read a paper at the thirty-fifth meeting of the Royal Society of Canada, held at Ottawa at the end of last year, entitled "The Quantitative Study of Climatic Factors in Relation to Plant Life."

Dr. W. S. Cooper of the University of Minnesota gave a lecture before the Geographic Society of Chicago on February 23 entitled "The Vegetation of the Glaciers of Alaska." Dr. Cooper's paper on a similar topic before the Association of American Geographers in December last was referred to in the February *Review* (p. 142).

MR. HARRY A. FRANCK, author of "A Vagabond Journey Around the World," gave a lecture on March 7 before the Geographical Society of Philadelphia entitled "Tramping Down the Andes: Incidents of a 2,400-Mile Foot Journey from Bogotá to Cuzco via Quito."

DR. ROLAND M. HARPER read a paper before the Torrey Botanical Club of New York on February 28 on "Two Long Island Peat Bogs."

MR. WYATT MALCOLM, at the thirty-fifth meeting of the Royal Society of Canada, held at Ottawa at the end of last year, presented an outline of the bibliography of Canadian geology for the year 1915.

MR. J. B. TYRRELL read a paper at the thirty-fifth meeting of the Royal Society of Canada, held at Ottawa at the end of last year, entitled "Notes on the Geology of the Nelson and Hayes Rivers, Manitoba."

MR. JAMES WHITE of the Conservation Commission of Canada read a paper at the thirty-fifth meeting of the Royal Society of Canada, held at Ottawa at the end of last year, entitled "Place Names in the Southern Rockies [of Canada]."

OBITUARY

DR. F. J. H. MERRILL died in Los Angeles on November 29, 1916, in his fifty-fifth year. From 1894 to 1904 Dr. Merrill was director of the New York State Museum at Albany and from 1899 to 1904 state geologist of New York. Since 1904 he had been engaged in private practice. Dr. Merrill is best known to geographers through the hypsometric map of New York State, 1:760,320, which was published in 1901 under his direction.

PROFESSOR HENRIK MOHN, professor of meteorology at the University of Christiania, died on September 12, 1916, at Christiania, aged eighty-one years. For many years he had been director of the Norwegian Meteorological Institute; in 1882 and 1883 he was in charge at Bossekop, the Norwegian station forming a part of the international system to study Arctic meteorology in those years. Professor Mohn's best-known work is "Grundzüge der Meteorologie," 5th edit., Berlin, 1898. Other important works are: Die Norwegische Nordmeer-Expedition: Resultate der Lothungen und Tiefseetemperatur-Beobachtungen, *Ergänzungsheft No. 63 zu Petermanns Mitt.*, Gotha, 1880; Die Strömungen des europäischen Nordmeeres, *Ergänzungsheft No. 79 zu Petermanns Mitt.*, Gotha, 1885; "The North Ocean: Its Depths, Temperature, and Circulation," 1887; Wissenschaftliche Ergebnisse von Dr. F. Nansens Durchquerung von Grönland, 1888 (with Nansen), *Ergänzungsheft No. 105 zu Petermanns Mitt.*, Gotha, 1892; and his discussions of the meteorology of the Nansen and Sverdrup expeditions (*The Norwegian North Polar Expedition, 1893-1896: Scientific Results*, Vol. 6, 659 pp., London, etc., 1905; *Report of the Second Norwegian Arctic Expedition in the "Fram," 1898-1902, No. 4*, 399 pp., Christiania, 1907).